

THAT WHICH IS CLAIMED IS:

1. An electronic module, comprising:  
a monolithic microelectronic substrate including at least one integrated circuit die and a redistribution structure thereon providing a connector contact coupled to the at least one integrated circuit die.  
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2. A module according to Claim 1, wherein the connector contact comprises an edge connector contact.
3. A module according to Claim 1, wherein the monolithic substrate  
10 comprises a plurality of unseparated integrated circuit dice.
4. A module according to Claim 1, wherein the redistribution structure is configured to provide a passive electronic device electrically coupled to the at least one integrated circuit die.  
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5. A module according to Claim 4, wherein the passive electronic device comprises a capacitor, a resistor and/or an inductor.
6. A module according to Claim 1, wherein the redistribution structure  
20 comprises a land configured to provide electrical connection to a contact pad of an electronic device mounted on the substrate.
7. A module according to Claim 6, further comprising an electronic device mounted on the substrate and having a contact pad electrically coupled to the  
25 land.
8. A module according to Claim 1, further comprising a support layer affixed to a surface of the monolithic substrate and configured to support the connector contact.  
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9. A module according to Claim 8, wherein the support layer is configured to serve as a heat sink.

10. A module according to Claim 1, further comprising a protection layer affixed to a surface of the monolithic substrate.

5 11. A module according to Claim 10, wherein the protection layer is configured to serve as a heat sink.

12. An electronic module, comprising:  
a microelectronic substrate including at least one integrated circuit die therein;  
10 and  
a redistribution structure comprising interleaved conductive and insulation layers formed on the at least one integrated circuit die, the redistribution structure including at least one conductive layer including a compressive connector contact coupled to the at least one integrated circuit die.

15 13. A module according to Claim 12, wherein the connector contact comprises an edge connector contact.

20 14. A module according to Claim 12, wherein the at least one integrated circuit die comprises a plurality of unseparated integrated circuit dice.

25 15. A module according to Claim 12, wherein the redistribution structure is configured to provide a passive electronic device electrically coupled to the at least one integrated circuit die.

16. A module according to Claim 15, wherein the passive electronic device comprises a capacitor, a resistor and/or an inductor.

30 17. A module according to Claim 11, wherein the redistribution structure comprises at least one conductive layer configured to provide electrical connection to a contact pad of an electronic device mounted on the substrate.

18. A module according to Claim 17, further comprising an electronic device mounted on the substrate and having a contact pad electrically coupled to the at least one conductive layer.

5 19. A module according to Claim 12, further comprising a support layer affixed to a surface of the monolithic substrate and configured to support the connector contact.

10 20. A module according to Claim 19, wherein the support layer is configured to serve as a heat sink.

21. A module according to Claim 12, further comprising a protection layer affixed to a surface of the substrate.

15 22. A module according to Claim 21, wherein the protection layer is configured to serve as a heat sink.

23. An article of manufacture, comprising:  
a wafer having a plurality of integrated circuit dice therein and a redistribution  
20 structure on the plurality of integrated circuit dice, the redistribution structure including a connector contact coupled to at least one of the plurality of integrated circuit dice.

24. An article according to Claim 23, wherein the wafer comprises a  
25 plurality of groups of integrated circuit dice and a plurality of redistribution structures disposed on and coupled to respective ones of the groups of integrated circuit dice, each of the redistribution structures including a connector contact.

25. An article according to Claim 24, wherein the plurality of groups of  
30 integrated circuit dice and associated redistribution structures are separable into a plurality of modules.

26. An article according to Claim 25, wherein the connector contacts of the respective redistribution structures are configured to provide edge connector contacts for the respective modules.

5           27. An electronic module, comprising:  
a monolithic microelectronic substrate including a plurality of unseparated integrated circuit dice and a multilayer redistribution structure comprising interleaved conductive and insulation layers on the plurality of unseparated integrated circuit dice, the redistribution structure including at least one conductive layer including an edge  
10 connector contact electrically coupled to at least one of the plurality of integrated circuit dice.

28. A module according to Claim 27, further comprising a protection layer affixed to the substrate.  
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29. A module according to Claim 28, wherein the protection layer is configured to support the edge connector contact.

30. A module according to Claim 28, wherein the edge connector contact  
20 is disposed adjacent an edge of the substrate, and wherein the protection layer is disposed on a surface of the substrate opposite the redistribution structure and underlies the edge connector contact.

31. A module according to Claim 28, wherein the protection layer is  
25 configured to serve as a heat sink.

32. A module according to Claim 28, wherein the protection layer comprises at least one of a metal layer or a thermally conductive polymer layer.

30           33. A module according to Claim 28, wherein the protection layer comprises first and second protection layers affixed to respective ones of the substrate and the redistribution structure.

34. A module according to Claim 27, wherein the plurality of unseparated integrated circuit dice comprises a plurality of integrated circuit memory devices.

5 35. A module according to Claim 27, wherein the redistribution structure provides interconnections among the plurality of integrated circuit dice.

36. A module according to Claim 27, wherein the redistribution structure comprises a passive electronic device.

10 37. A module according to Claim 36, wherein the passive electronic device comprises a capacitor, a resistor and/or an inductor.

38. A module according to Claim 27, wherein the redistribution structure includes at least one conductive layer configured to provide an electrical contact for  
15 an electronic device mounted on the substrate.

39. A module according to Claim 38, further comprising an electronic device mounted on the substrate and in electrical contact with the at least one conductive layer.

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40. A method of fabricating an electronic module, the method comprising:  
forming a plurality of integrated circuit dice and a redistribution structure on a wafer, the redistribution structure coupled to the plurality of integrated circuit dice  
and including a connector contact.

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41. A method according to Claim 40, further comprising separating the plurality of integrated circuit dice and the redistribution structure from an adjacent portion of the wafer to provide an electronic module.

30 42. A method according to Claim 41, comprising configuring the connector contact to serve as an edge connector contact for the module.

43. A method according to Claim 41, wherein forming a plurality of integrated circuit dice and a redistribution structure comprises configuring the redistribution structure to provide a passive electronic device.

5 44. A method according to Claim 43, wherein the passive device comprises a capacitor, a resistor and/or an inductor.

45. A method according to Claim 41, further comprising forming a support layer on the electronic module, the support layer configured to support the connector  
10 contact.

46. A method according to Claim 45, wherein the support layer is configured as a heat sink.

15 47. A method according to Claim 45, wherein forming a support layer is preceded by thinning the electronic module.

48. A method according to Claim 40, further comprising forming a protection layer on the redistribution structure and/or the at least one integrated circuit  
20 die.

49. A method according to Claim 48, wherein the protection layer is configured as a heat sink.

25 50. A method of fabricating an electronic module, the method comprising:  
forming a plurality of integrated circuit dice on a wafer; and  
forming a redistribution structure on the plurality of integrated circuit dice, the redistribution structure including a connector contact coupled to at least one of the integrated circuit dice.  
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51. A method according to Claim 50, further comprising separating the integrated circuit dice and the redistribution structure from an adjacent portion of the wafer to produce an electronic module.

52. A method according to Claim 51, comprising configuring the contact to serve as an edge connector contact for the module.

53. A method according to Claim 51, comprising configuring the redistribution structure to form a passive electronic device.

54. A method according to Claim 53, wherein the passive device comprises a capacitor, a resistor and/or an inductor.

55. A method according to Claim 51, further comprising forming a support layer on the electronic module, the support layer configured to support the connector contact.

56. A method according to Claim 55, wherein the support layer is configured as a heat sink.

57. A method according to Claim 51, wherein forming a support layer is preceded by thinning the electronic module.

58. A method according to Claim 51, further comprising forming a protection layer on the redistribution structure and/or the plurality of integrated circuit dice.

59. A method according to Claim 58, wherein the protection layer is configured as a heat sink.